ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

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ARD-7 2008

Air Pollution Control Requirements for On-Site Power Generation Equipment

With the high cost of electricity, business owners and operators have been looking for ways to reduce the expense associated with purchasing electricity from utility companies. One possibility that has increased in popularity is to purchase and install on-site electric generation equipment. In many instances, companies feel they can produce electricity at less cost than the purchased power.

Environmental Issues and Cost Effectiveness

While it may seem that on-site power generation can be economically feasible, which may be true in some cases, other issues need to be considered to determine overall cost effectiveness. In addition to the normal economic analysis parameters of equipment, fuel, maintenance and other operating expenses, a potential on-site generation business must also consider the environmental impacts and costs associated with the installation of electric generation equipment.

Diesel internal combustion engines used to generate electricity produce significantly higher emissions of nitrogen oxides (NOx) for relatively small amounts of electricity, compared to larger utility power plants. NOx emissions are the major cause of ground-level ozone, a respiratory irritant more commonly referred to as smog. They also contribute to small particle (soot or dust) formation, acid rain, and nitrogen deposition to surface waters.

The NH Department of Environmental Services Air Resources Division is responsible for the maintenance of air quality in New Hampshire and has developed regulations to insure that health-based air quality standards are achieved and maintained. To meet this responsibility, DES has a permitting system in which proposed air pollution-emitting devices, including on-site electricity generators, are reviewed and analyzed to determine their effect on air quality. In addition, DES rules (N.H. Code of Administrative Rules Chapter Env-A 3700) establish requirements for a NOx emissions reduction fund for NOx emitting generation sources.

Permitting Requirements for On-Site Generators

Under current regulations, any generator utilizing one or more internal combustion engines with any of the following design ratings (combined total for all engines) is required to submit a permit application(s) to the DES Air Resources Division for review and approval:

1) Greater than or equal to 1.5 million BTU per hour, using liquid fuel oil (corresponds to approximately 200 horsepower depending upon engine heat rate).

2) Greater than or equal to 10 million BTU per hour, using natural gas or LP gas (corresponds to approximately 1,250 horsepower depending upon engine heat rate).

3) The potential to emit greater than 25 tons per year of any single regulated air pollutant.

4) That actually emit greater than five tons per year, if they are NOx emitting generating sources (NEGS).

In addition, if the facility wishes to emit greater than 50 tons per year of nitrogen oxides (NOx), the engines will be required to apply "reasonably available control technology" in order to limit the emissions of NOx.

NOx Emissions Reduction Fund Requirements for NOx Emitting Generation Sources (Env-A 3700)

The purpose of Env-A 3700 is to require the owners of NOx emitting generating sources (NEGS) to report to DES power generation data in kilowatt-hours, as well as NOx emission information. Based on that information, sources must then acquire NOx emissions reduction credits to offset their NOx emissions, or pay emissions fees to DES.

NEGS are defined as certain internal combustion engines or combustion turbines that generate electricity for sale or on-site use and emit more than seven pounds of NOx per megawatt-hour (MWh). NOx-emitting sources that are regulated under Env-3200 (NOx Budget Trading Program) are not included as NEGS under Env-A 3700 because they emit less than seven pounds of NOx per megawatt-hour.

Main components of Env-A 3700 are summarized as follows:

- All new NEGS are subject to Env-A 3700. NEGS permitted on or before July 1, 1999, are subject to Env-A 3700 beginning on November 18, 2007.
- By definition, NEGS do not include emergency generators, start-up or temporary generators, portable generators, generators in total from any facility which emit five tons or less of NOx per calendar year, and generators which are located in an area where electrical power is not reasonable or reliably available. For an engine to be considered portable and therefore exempt from Env-A 3700, both the engine and the equipment that it is used to power must be portable.
- The first seven pounds per megawatt hour of NOx emissions are exempt from fees.
- Additional amounts above seven pounds per megawatt hour may be exempt from fees if they are attributable to the provision of other, non-electric services, such as steam and heat.
- The owner of an applicable NEGS must monitor, record, and report power generation data and NOx emission data.
- After each year, the owner of an applicable NEGS will have until April 15 to evaluate and report their monthly emissions and pay fees for the previous year.
- The owner of an applicable NEGS has the option of paying the fees by April 15 or obtaining emissions reduction credits to balance the non-exempt emissions during the previous year.
- DES shall prepare a proposal for use or carry-over of the collected fees in the fund and shall conduct a public hearing on the proposal if requested.

- Fees are $1,000 per ton for ozone season months and $500 per ton for non-ozone season months. Ozone season months are May through September.

Estimated Costs for Compliance

When a facility is performing an economic analysis, the costs for environmental compliance need to be evaluated. The following costs can be used as a general guideline. These figures represent estimated costs for a small prime power installation (e.g., 500 HP emitting 10 tons of NOx/year), and are subject to increases for multiple units and larger installations:

Preparation of Permit Application and Recordkeeping
$1,000
Annual NOx Emissions Reduction Fund Fees
$3,000-$7,000
Yearly Emission Based Fees for Other Pollutants
$700-$1,000

Conclusion

The costs for environmental compliance can be expensive. In addition, the installation of a stationary internal combustion engine without proper permitting can result in an enforcement action being brought by DES and/or the U.S. Environmental Protection Agency. This could add additional costs over and above the compliance costs described above.

Before committing to any installation of on-site power generation utilizing stationary internal combustion engines, business owners and operators should contact the DES Air Resources Division at (603) 271-1370.